

NOTES RELATING TO THE FLORAS OF NORFOLK  
AND LORD HOWE ISLANDS, II<sup>1</sup>

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After many years when it proved difficult or impossible to devote time to taxonomic research, I have recently been able to return to the study of the floras of Norfolk and Lord Howe islands in the southwestern Pacific.

With a view to writing a Flora of the islands as part of a supplementary volume of the new *Flora of Australia*, I have first undertaken a critical survey and assessment of the indigenous vascular plants, species by species. This has led to a number of taxonomic conclusions and distributional observations, which are set out below under the appropriate families (arranged alphabetically). As the work progresses and, it is hoped, the islands are revisited so that additional field observations can be carried out, yet further notes may be published as precursors to the Flora.

PSILOTALES

**Tmesipteris** Bernh.

In recent years there has been general agreement that this is not a monotypic genus, although the differences between species are relatively small and great care is needed when distinguishing them. The representatives of the genus on Norfolk Island and on Lord Howe Island are not the same. The Lord Howe Island plant is *Tmesipteris truncata* (R. Br.) Desv., which also occurs in southern Queensland and New South Wales. The Norfolk Island plant, however, needs a new name, because when Endlicher described it in his *Prodromus* and named it *T. forsteri*, he unfortunately included the name *T. tannensis* (Sprengel) Bernh. in its synonymy and thus rendered his name illegitimate by the present Code of Nomenclature. As a replacement I propose the following name.

**Tmesipteris norfolkensis** P. S. Green, sp. nov.

*T. forsteri* Endl. Prodr. Fl. Norfolk. 6. 1833, *quoad descr.*, *excl. syn. et typ.*; Spring, Mém. Acad. Roy. Sci. Belgique 24(Monogr. Fam. Lycopod. 2): 265. 1849; Turner *et al.* Conserv. Norfolk Is. 29. 1962; Leigh *et al.* Rare & Threat. Austral. Pl. 125. 1981. TYPE: Norfolk Island, *Bauer s.n.* (holotype, w!).

*Psilotum forsteri* (Endl.) Endl. Ic. Gen. Pl. t. 85. 1839, *quoad pl. Norfolk.*, *excl. typ.*

<sup>1</sup>Part I was published in J. Arnold Arbor. 51: 204–220. 1970.

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*Tmesipteris tannensis* sensu Maiden, Proc. Linn. Soc. New South Wales **28**: 740. 1903; sensu Laing, Trans. & Proc. New Zealand Inst. **47**: 15. 1915; non (Sprengel) Bernh.

ADDITIONAL SPECIMENS EXAMINED. **Norfolk Island**: Red Road toward Mt. Bates, *Green* 1377 (A); Mt. Pitt Reserve, between Palm Glen and Red Road, *Lazarides* 8086 (κ); without further locality, *Cunningham* 16 (62) (κ), 64 (κ), *Laing* s.n., 1917 (CANTY), *Maiden & Boorman* s.n., 1902 (κ), *McComish* 46 (κ), *Milne* 3 (κ).

This species can be distinguished from *Tmesipteris tannensis* of New Zealand, with which it has been confused, by its rounded (vs. pointed) synangia; and from *T. elongata* Dangeard, to which it is perhaps most closely related, by its slightly more acute and narrower "leaves" (length-breadth quotients from the specimens at κ: 3.8–5, compared with 4.7–6) and by the determinate growth of its fronds; the last character places it in Chinnock's "Lanceolata type" (Chinnock, 1975).

## AIZOACEAE

### *Tetragonia* L.

Although studies using fresh material are particularly desirable in this family, after examining the range of dried specimens at Kew I cannot believe that the plant called *Tetragonia implexicoma* (Miq.) Hooker f. is a different species from the New Zealand *T. trigyna* Banks & Sol. ex Hooker f. Even though the latter name was maintained by Allan (1961), Cheeseman (1914), in the text accompanying his excellent plate of *T. trigyna*, cast doubt on the distinctness of the two species. More recently, Sykes (1977, p. 75) also admitted that they are "very closely related." I therefore treat the Norfolk Island and Lord Howe Island plants as *T. implexicoma* (Miq.) Hooker f. (not "*amplexicoma*," a typographic error that Miquel subsequently corrected). I have seen two collections, *McComish* 52 (κ), from Norfolk Island, and *McComish* 118 (κ), from Lord Howe Island.

It may be worth noting that the type material of *Tetragonella implexicoma* Miq. (the basionym of *Tetragonia implexicoma*), a Preiss collection from Rottnest Island, Western Australia, with its narrowly oblong-elliptic (almost linear) leaves 3–6 mm wide, looks very different from material I have seen of the plant known by this name from Victoria, South Australia, and Tasmania.

The related *Tetragonia tetragonioides* (Pallas) Kuntze also occurs on both islands.

## AMARANTHACEAE

### *Centrostachys aquatica* (R. Br.) Wallich

Although Moquin-Tandon (1849) recorded this species from Norfolk Island, an error followed by Schinz (1934) and Backer (1949), Robert Brown in his protologue (1810) described both *Achyranthes arborescens* and *A. aquatica* (the basionym of *Centrostachys aquatica*) "in obs." but attributed only the former to Norfolk Island.

## EUPHORBIACEAE

**Drypetes** Vahl

The Lord Howe representative of this genus, which has been called *Drypetes affinis* Pax & Hoffm., is too close to *D. lasiogyna* (F. Mueller) Pax & Hoffm. of Australia to be specifically distinct, and I believe it should be reduced to a subspecies of the latter. They differ in fruit size (10–14 mm long in the Australian subsp. *lasiogyna* material, vs. 20–25 mm in subsp. *affinis* from Lord Howe) and in leaf texture and size (the Lord Howe plants have more coriaceous and usually slightly smaller leaves).

Two varieties of *Drypetes lasiogyna* subsp. *lasiogyna* have been recognized; their distributions adjoin in Queensland. They differ only in the indumentum of the ovary and fruit—hairy in var. *lasiogyna* and glabrous in var. *australasica* (Muell. Arg.) Airy Shaw. The Lord Howe Island plant has glabrous ovaries and fruits.

***Drypetes lasiogyna*** (F. Mueller) Pax & Hoffm. subsp. ***affinis*** (Pax & Hoffm.)  
P. S. Green, comb. et stat. nov.

*D. affinis* Pax & Hoffm. in Engler, Pflanzenr. IV. 147 XV(Heft 81): 271. 1922. TYPE: Lord Howe Island, "F. Mueller" (B, destroyed).

*Hemicyclia sepiaria* sensu F. Mueller, Fragm. Phytogr. Austral. 9: 77. 1875.

*H. australasica* sensu Bentham, Fl. Austral. 6: 118. 1873, *pro parte*; sensu Hemsley, Ann. Bot. 10: 250. 1896; sensu Maiden, Proc. Linn. Soc. New South Wales 23: 134. 1898; sensu Oliver, Trans. & Proc. New Zealand Inst. 49: 141. 1917.

*Drypetes lasiogyna* (F. Mueller) Pax & Hoffm. var. *australasica* sensu Rodd & Pickard, Cunninghamia 1: 272. 1983.

SPECIMENS EXAMINED. **Lord Howe Island:** SE lower slopes of Malabar, *Green 1572* (A, K); Ned's Beach, *Rodd 1426* (K), *Van Balgooy 1108* (K); on top of cliff at E end of Ned's Beach, *Uhe 1252* (K), *1264* (K); without further locality, *Milne 7* (K), *Moore 39* (K), *46* (K).

## MORACEAE

**Ficus** L.

Although Corner (1965) reduced *Ficus columnaris* C. Moore & F. Mueller of Lord Howe Island to synonymy under *F. macrophylla* Desf. ex Pers. and determined the Kew isotype of the former as this species, I suspect that he did not see sufficient material to enable him to assess its real status.

The most remarkable characteristic of the Lord Howe Island plant is the lack of a single main trunk. Instead, it has ten to twenty or more trunks, many of them equally large, each having arisen from an aerial root that has reached down from a spreading canopy branch to touch the ground, root, and thicken into a stem with the dimensions of a trunk—hence the epithet *columnaris*. (Hutchinson (1969) published a sketch of the habit based on a drawing by C. Moore dated Aug. 1869, which accompanies the isotype of *Ficus columnaris* at Kew.) Duff (1882) recorded that the largest of the old trees were then reported

to cover an area of two to three acres (ca. 1 ha). This habit contrasts strongly with that of the mainland *F. macrophylla*, the Moreton Bay fig, which invariably has a single trunk with only limited development of banyanlike roots (these never attain the dimensions of a main trunk).

In addition the leaves of the Lord Howe Island plant have a strongly ferruginous indumentum on the undersides (vs. "finely white felted beneath, at first" for *Ficus macrophylla*—Corner, 1965, p. 109). On the island, even at a distance, the fig can be identified when the wind is blowing by the brown undersides of the leaves, a fact pointed out by C. Moore (1869a, 1869b), who also claimed that the island plant differed from *F. macrophylla* in the size of its fruits and leaves. From the limited material currently available (seven fruiting and eleven vegetative specimens in all), the possible differential character of fruit size does not seem very strong, although it may exist—the fruits on the two Lord Howe Island specimens in fruit are 15 mm long (vs. 16–19 mm for those of *F. macrophylla*). In leaf size there is considerable overlap: those of the former are 8–17.5 cm long, and those of the latter 10–21 cm.

Taking into account the habit and leaf indumentum, weakly supported by leaf and fruit size, I believe that the Lord Howe Island fig is worthy of recognition as a separate endemic subspecies.

***Ficus macrophylla* Desf. ex Pers. subsp. *columnaris* (C. Moore) P. S. Green, comb. et stat. nov.**

*F. columnaris* C. Moore, Trans. Bot. Soc. Edinburgh **10**: 368. 1870, Official Visit Lord Howe Is. 1870, 21. 1870; C. Moore & F. Mueller, Proc. Acclim. Soc. Victoria **3**: 71. 1874, in F. Mueller, Fragm. Phytogr. Austral. **8**: 247. 1874. TYPE: Lord Howe Island, 1869, *C. Moore 56* (holotype, MEL, not seen; isotype, K!).

Although the date of publication of *Ficus columnaris* has usually been given as 1874, there seems to be no reason not to accept Moore's use of the name four years earlier. It was not published as provisional, and although the description is scanty by modern standards, it is adequate to establish valid publication.

The trees on Lord Howe Island seem to be susceptible to exposure and wind; the more the surrounding woody vegetation is removed and the figs isolated, the less they will thrive or even survive.

### **Malaisia Blanco**

*Malaisia scandens* (Lour.) Planchon is the only species in this genus. Its distribution ranges from southern China and southeastern Asia through Malesia (including the Philippine Islands) to the Mariana Islands (*vide* Smith, 1981), Fiji, Tonga (*vide* Smith, 1981), New Caledonia, and Australia (coastal New South Wales, Queensland, and Northern Territory). Throughout this area the species appears fairly uniform, although several taxa have been described in the past.

However, the Lord Howe Island plant, isolated on a small oceanic island at the edge of the range of the species, differs consistently in leaf shape and fruit size from the rest of the specimens seen. The leaves are ovate or ovate-lan-

ceolate, (5–)8–11(–17) cm long, and consistently long-acuminate to acute (vs. rounded, acute, or abruptly acuminate at the apex). The mature fruits of the species as a whole vary in length from 6 to 8 cm, but those from Lord Howe Island are almost double this—13–14 cm long—and proportionately broad. Although Bentham had seen no carpellate or fruiting material, he noted (1873, p. 180) that the Lord Howe Island plant had “large ovate-acuminate or ovate-lanceolate leaves and remarkably large male spikes.” Indeed, the staminate catkins are stouter and generally longer than those on specimens from the Australian mainland, and usually (but not always) larger than those on Malesian material.

The differences in leaf shape and fruit size, however, lead me to recognize the Lord Howe plant as an endemic subspecies.

**Malaisia scandens** (Lour.) Planchon subsp. **megacarpa** P. S. Green, subsp. nov.

A subsp. scandente foliis ovato-lanceolatis longe acuminatis, et fructibus majoribus (13–14 cm longis), differt.

TYPE. Lord Howe Island, Nov. 1938, *McComish* 35 (holotype, κ!).

## MYRSINACEAE

### **Rapanea** Aublet

Although Allan (1961) followed Hosaka (1940) in including *Rapanea* Aublet in *Myrsine* L., I prefer to follow Degener (1939), Oliver (1951), and Smith (1973) and maintain them as distinct genera, while agreeing that *Suttonia* A. Rich. is a synonym. The staminal “flange” typical of *Myrsine* is not present in *Rapanea*.

This is a difficult genus and is in need of revision. Although a number of the Pacific species have been sorted out by Smith (1973), those from Australia and the parts of Melanesia he did not cover are in need of critical study and assessment. Nevertheless, careful examination of the three species that have been described from Lord Howe Island (*Rapanea mccomishii* Sprague, *R. myrtillina* Mez, and *R. platystigma* Mez) shows them to be distinct and endemic to the island. The affinities of each of them, whether with Queensland, New Caledonia, Fiji, or New Zealand (*R. australis* (A. Rich.) W. Oliver), will need to be assessed when the Old World species have been revised.

The Norfolk Island species, an endemic known on the island as “beech,” needs a new name because *R. crassifolia* R. Br. of Australia (with the type from Queensland) has been incorrectly used for it.

**Rapanea ralstoniae** P. S. Green, nom. nov.

*Myrsine crassifolia* sensu Endl. Prodr. Fl. Norfolk. 48. 1833; DC. Prodr. Syst. Nat. Regni Veg. 8: 96. 1844, *pro parte*; Seem. Fl. Vit. 149. 1866; *non* R. Br.

*Rapanea crassifolia* sensu Mez in Engler, Pflanzenr. IV. 236(Heft 9): 365. 1902, *quoad pl. ins. Norfolk.*; Maiden, Proc. Linn. Soc. New South Wales 28: 707. 1904; Laing, Trans. & Proc. New Zealand Inst. 47: 33. 1915; Turner *et al.* Conserv. Norfolk Is. 35. 1968; *non* (R. Br.) Mez.

SPECIMENS EXAMINED. **Norfolk Island:** in skirts of woods in shady spots, *Cunningham 18* (κ); margin of woods, *Cunningham 95* (κ); Mt. Bates, toward Red Road, low forest, *Green 1389* (A); Cook's Memorial, *Henderson s.n.*, 1967 (E); Anson Bay road, near Selwyn Bridge above Jacobs Rock, volcanic forested slopes, *Lazarides 8058* (κ); ca. 2 mi [3.2 km] NE of cemetery at Kingston, *Uhe 1104* (κ); top and upper slopes of Mt. Pitt, *Uhe 1156* (κ), *1171* (κ), *1180* (κ); without further locality, *Backhouse 690* (κ), *Bauer s.n.* (κ), *Caley s.n.* (BM), *Cunningham s.n.*, 1830 (κ), *Maiden & Boorman s.n.*, Nov. 1902 (BM, κ), *Robinson s.n.*, 1902 (BM).

Bentham (1868) noted that the Norfolk Island and Australian plants were different. However, Mez (1902) cited *Rapanea crassifolia* in his monograph under both *R. subsessilis* (F. Mueller) Mez and *R. porosa* (F. Mueller) Mez. If those species remain distinct after revision, the type of *Myrsine crassifolia* R. Br. (*Rapanea crassifolia* (R. Br.) Mez) probably belongs to the latter and *R. porosa* will then pass into synonymy. I have seen the type of Robert Brown's species at BM.

It gives me great pleasure to name this Norfolk Island endemic after Mrs. Pat Ralston, who tragically died of cancer in 1971. During her lifetime she did much to revive an interest in the plants of Norfolk Island. Her anxiety at the destruction of the limited natural vegetation remaining on the island and her efforts to preserve it eventually led to the investigation carried out by Professor John Turner and colleagues on behalf of the Australian Conservation Foundation. This gave rise to their excellent publication, *The Conservation of Norfolk Island* (Turner *et al.*, 1968).

## NYCTAGINACEAE

### **Pisonia** L.

Sykes (1977, p. 121) has suggested that the "tropical" *Pisonia umbellifera* J. R. & G. Forster is different from the "homogeneous entity from Norfolk Island, the Kermadecs, and New Zealand." I agree, and with this entity I also include the plants from Lord Howe Island and Hawaii. The specific concept of Stemmerik (1964) has, in this case, been too broad, although he appears to have been correct in treating *Ceodes* J. R. & G. Forster, *Calpidia* Thouars, *Heimerlia* Skottsbo., and *Heimerliodendron* Skottsbo. as congeneric.

***Pisonia brunoniana*** Endl. Prodr. Fl. Norfolk. 43. 1833; Maiden, Proc. Linn. Soc. New South Wales **28**: 712. 1903; Laing, Trans. & Proc. New Zealand Inst. **47**: 26. 1915; Oliver, Trans. & Proc. New Zealand Inst. **49**: 136. 1917. TYPE: Norfolk Island, *Bauer s.n.* (holotype, w, destroyed; isotype, κ!).

*Pisonia umbellifera* sensu Hemsley, Ann. Bot. (London) **10**: 248. 1896; sensu Stemmerik, Blumea **12**: 280. 1964; sensu Turner *et al.* Conserv. Norfolk Is. 33. 1968.  
*Calpidia brunoniana* (Endl.) Heimerl, Oesterr. Bot. Z. **63**: 283. 1913.  
*Ceodes brunoniana* (Endl.) Skottsbo. Svensk Bot. Tidskr. **30**: 738. 1936.  
*Heimerlia brunoniana* (Endl.) Skottsbo. *ibid.* 738. 1936.  
*Heimerliodendron brunoniana* (Endl.) Skottsbo. *ibid.* **35**: 364. 1941.

## ORCHIDACEAE

In addition to his work on the orchids of Australia, Mark Clements, of the Australian National Botanic Gardens, Canberra, has studied those from Lord Howe and Norfolk islands and their relationships. As a result of these studies, including an examination of the types where indicated below, he has been able to provide the taxonomy and synonymy that follow; the nomenclatural conclusions, however, are my own.

**Dendrobium Sw.**

Until 1975, when the old Article 71 was deleted from the International Code of Botanical Nomenclature at the Leningrad International Botanical Congress, scientific names based on monstrosities could be rejected. However, this article is no longer a part of the Code, and the names of the *Dendrobium* plants from Norfolk Island with peloric flowers, named and described by Endlicher as early as 1833, can therefore no longer be rejected and must now be accepted as legitimate. It seems possible that the Norfolk Island populations, which appear to be permanently peloric, are apomictic. The legitimacy of names based on "monstrosities," along with the taxonomic conclusions that Clements reached after studying material from the islands and the mainland, affects the name of the well-known and widespread Australian plant *D. gracilicaule* F. Mueller, as follows.

**Dendrobium macropus** (Endl.) Reichb. f. ex Lindley, J. Linn. Soc., Bot. 3: 9. 1859.

*Thelyphyton macropus* Endl. Prodr. Fl. Norfolk. 33. 1833. TYPE: Norfolk Island, *Bauer s.n.* (w, not seen), *Bauer* icon. ("iconotype," w!).

**Dendrobium macropus** subsp. **gracilicaule** (F. Mueller) P. S. Green, comb. et stat. nov.

*Dendrobium elongatum* A. Cunn. Edward's Bot. Reg. 25: Misc. 33. 1839; *non* Lindley, 1830.

*D. gracilicaule* F. Mueller, Fragm. Phytogr. Austral. 1: 179. 1859. TYPE: Australia, Queensland, Moreton Bay, *F. Mueller s.n.* (MEL, not seen).

This subspecies grows in coastal New South Wales and eastern Queensland.

**Dendrobium macropus** subsp. **howeanum** (Maiden) P. S. Green, comb. et stat. nov.

*Dendrobium gracilicaule* F. Mueller var. *howeanum* Maiden, Proc. Linn. Soc. New South Wales 24: 382. 1899. TYPE: Lord Howe Island, *Maiden s.n.* (NSW, not seen).

SPECIMENS EXAMINED. **Lord Howe Island:** ridge between Old Settlement and North Bay, *Green 1943* (κ); ridge W of Malabar, *Green 1958* (κ); last part of ascent of Mt. Gower, *Green 1609* (A); without further locality, [*Fullager*] *s.n.* (κ), *MacGillivray* in *H.M.S. Herald Bot.* 725 (κ), *McComish 17* (κ), *Milne s.n.*, Sept. 1853 (κ).

This subspecies passes under a number of names on several southwestern Pacific islands. For example, it also occurs on New Caledonia (under *D. gracilicaule* F. Mueller; see Hallé, 1977) and Fiji (as *D. gracilicaule* var. *vitiense* Rolfe). It is conspecific with but sufficiently distinct—by virtue of its shorter, stouter inflorescences and its unspotted flowers (rarely with a few marks)—from subsp. *gracilicaule* on the mainland of Australia, which we believe to be closely related.

### **Dendrobium macropus** subsp. **macropus**

*Thelychiton brachypus* Endl. Prodr. Fl. Norfolk. 33. 1833. TYPE: Norfolk Island, *Bauer s.n.* (w, not seen), *Bauer* icon. (“iconotype,” w!).

SPECIMENS EXAMINED. **Norfolk Island:** N slopes of Mt. Bates, *Green 1422* (A); without further locality, *Backhouse 627* (κ), *Laing s.n.* (CANTY), *McComish 75* (κ). Sketch from *Bauer* drawing of *D. brachypus* (κ).

I believe that the plant Endlicher called *Thelychiton brachypus* was a young specimen of this subspecies flowering before the canelike stem characteristic of the species had developed.

### **Microtis** R. Br.

The earliest name applied to the one species of this genus growing on Norfolk and Lord Howe islands is given here.

### **Microtis unifolia** (Forster f.) Reichb. f. Beitr. Syst. Pl. 62. 1871.

*Ophrys unifolia* Forster f. Fl. Ins. Austral. Prodr. 59. 1786. TYPE: New Zealand, *Forster s.n.* (BM?, not seen).

*Epipactis porrifolia* Sw. Kongl. Vetensk. Acad. Nya Handl. 21: 233. 1800. TYPE: *Swartz?* (s, not seen).

*Microtis porrifolia* (Sw.) R. Br. Prodr. Fl. Novae Holland. 320. 1810.

SPECIMENS EXAMINED. **Lord Howe Island:** SE slope of Malabar, *Green 1556* (A); Transit Hill and Poole’s Lookout, *McComish 20* (κ); without further locality, *Fullager s.n.* (κ). **Norfolk Island:** without further locality, *McComish 40* (κ).

This species is also known from New Zealand and the Kermadec Islands, Australia, New Caledonia, and Vanuatu.

### **Oberonia** Lindley

Although Dockrill (1966) treated the species from Norfolk Island and that from Australia as different and maintained the name *Oberonia palmicola* F. Mueller for the latter, he did not say how they differ and gave no reason for separating them. McGillivray (1969, p. 166) stated that “*O. palmicola* has been reinstated [as different from *O. titania*],” but he, too, have no reasons and just referred back to Dockrill (1966).

A careful examination of the type materials, including the excellent drawings by Ferdinand Bauer at Vienna, shows them to be the same.



**Oberonia titania** Lindley, Folia Orchid. *Oberonia* 8. 1859. Type as for *Titania miniata* Endl.

*Titania miniata* Endl. Prodr. Fl. Norfolk. 31. 1833; non *Oberonia miniata* Lindley (1843). TYPE: Norfolk Island, Anson Bay, *Bauer s.n.* (w!).

*Oberonia palmicola* F. Mueller, Fragm. Phytogr. Austral. 2: 24. 1860. TYPE: Australia, New South Wales, *Beckler s.n.* (holotype, MEL, not seen; isotype, K!).

ADDITIONAL SPECIMENS EXAMINED. **Norfolk Island:** Mt. Bates track, *Ralston, Hoogland, & Turner s.n.*, 3 Oct. 1967 (K). Also, a dried specimen has been placed in the Kew Herbarium from a plant cultivated at Kew (8 Aug. 1972, Accession No. 310-71.02700) from *Green 1901*, collected on south slopes of Mt. Bates, 26 Aug. 1971.

### **Phreatia** Lindley

**Phreatia tahitensis** Lindley, J. Linn. Soc., Bot. 3: 62. 1858. TYPE: Tahiti, *Bidwill s.n.* (holotype, K-L!).

ADDITIONAL SPECIMENS EXAMINED. **Norfolk Island:** top of Mt. Bates, *Ralston 25* (A); without further locality, *Laing(?) s.n.* (CANTY), *McComish 144* (K).

This species has now been collected at least three times and is clearly indigenous. It has variously been identified as *Phreatia resiana* J. J. Smith and *P. obtusa* Schltr., but the latter is a synonym of *P. tahitensis* Lindley. On the island there is also *P. limenophylax* (Endl.) Benth.

### **Taeniophyllum** Bl.

This diminutive orchid was not discovered on Norfolk Island until 1967. It was then identified as *Taeniophyllum muelleri* Lindley ex Benth., a species from Queensland. However, a careful comparison of the type of this species at Kew with *Ralston, Hoogland, & Turner s.n.*, 31 Oct. 1967, has shown that the latter is not the species from the Australian mainland. *Ralston et al.* is near the widespread Pacific *T. fasciola* (Forster f.) Reichb. f., but it is more diminutive and its flowers bear a smaller spur. It needs further study and may be an undescribed taxon.

## POLYGONACEAE

### **Muehlenbeckia** Meissner

The identity of the *Muehlenbeckia* on Lord Howe Island appears to have been in doubt. Although it has been recorded as *M. axillaris* (Hooker f.) Walp. by Benth. (1870) and subsequently by Mueller (1875), Hemsley (1896), Maiden (1898), and Oliver (1917), its correct identification has been queried. Rodd (1974) recorded it as *M. complexa* (A. Cunn.) Meissner, and Rodd and Pickard (1983) listed it as *Muehlenbeckia* cf. *complexa*.

After examining several collections from Lord Howe Island (*Fullager s.n.*, *Green 1539*, *McComish 45*, *Moore 8*, *Rodd 1490*, *Uhe 1248*, and *Van Balgooy 1046*), I have concluded that the species represented there is indeed the New Zealand *Muehlenbeckia complexa* (A. Cunn.) Meissner.

## SAPOTACEAE

**Planchonella** Pierre

Although Allan (1961) used the name *Planchonella novo-zelandica* (F. Mueller) Allan for the New Zealand member of this genus, I believe that it and the Norfolk Island representative are conspecific—a conclusion also reached by W. R. Sykes (pers. comm.) of New Zealand and alluded to by Smith (1981).

**Planchonella costata** (Endl.) Pierre ex H. J. Lam, *Blumea* 5: 5. 1942.

*Achras costata* Endl. Prodr. Fl. Norfolk. 49. 1833. TYPE: Norfolk Island, *Bauer s.n.* (isotype, κ!).

*A. novo-zelandica* F. Mueller, Fragm. Phytogr. Austral. 9: 72. 1875. TYPES: New Zealand, *Colenso s.n.* (syntype, MEL?, not seen); *Kirk s.n.* (isosyntype, κ!).

*Planchonella novo-zelandica* (F. Mueller) Allan, Fl. New Zealand 1: 539. 1961.

ADDITIONAL SPECIMENS EXAMINED. **New Zealand:** between Ngaire and Wainai, opposite Cavallos, *R. Cunningham 404* (κ); Whangarei Heads, "*Pickmere*" 13 (κ); Kaikoura Is., *Kirk 70* (κ); Kawau, *Kirk s.n.*, March 1868 (κ); Little Barrier Is., *Shakespear s.n.* (κ); Great and Little Barrier Is., *Kirk 70* (κ); Manukau Heads, *Cheeseman 94* (κ). **Norfolk Island:** upper slopes of Mt. Pitt, along Mt. Pitt Road, *Hoogland 11355* (κ); without further locality, *Backhouse 615* (κ), *A. Cunningham 20* (κ), 96 (κ), *Laing s.n.* (CANTY), *McComish 59* (κ), 59A (κ).

Lam (1942) and Van Royen (1957) have recognized various varieties within their broad concept of *Planchonella costata*, but like Smith (1981) I believe that these represent other species.

Even though F. Mueller described the Lord Howe Island representative as distinct, examination of the range of material now available shows that it is conspecific with a species from the Australian mainland.

**Planchonella myrsinoides** (A. Cunn. ex Benth) Blake & Francis, *Austral. Rainf. Trees*, ed. 2. 358. 1951.

*Achras myrsinoides* A. Cunn. ex Benth, Fl. Austral. 4: 283. 1869. TYPE: Australia, Queensland, Rodd's Bay, *A. Cunningham 123* (lectotype, κ!, here designated).

*A. howeana* F. Mueller, Fragm. Phytogr. Austral. 9: 72. 1875. ISOSYNTYPES: Lord Howe Island, *Fullager s.n.* (κ!), *Milne 15* (κ!), *Moore 37* (κ!).

*Planchonella howeana* (F. Mueller) Pierre, Not. Bot. Sapot. 36. 1890.

ADDITIONAL SPECIMENS EXAMINED. **Australia.** QUEENSLAND. Cook Distr.: State Forest Reserve 607, Bridle Logging Area, 17°00'S, 145°35'E, *Hyland 7120* (κ). Port Curtis Distr.: near Rockhampton, *Francis s.n.*, March 1920 (κ). Burnett Distr.: Mt. Perry (inland from Bundaberg), *Boorman s.n.*, Aug. 1912 (κ). Wide Bay Distr.: Imbil, *L. S. Smith & Webb 3133* (κ); The Hummocks, ca. 5 mi [8 km] E of Bundaberg, *L. S. Smith 4103* (κ). Moreton Bay Distr.: Brisbane R., *A. Cunningham 54* (κ), 55 (κ), *Fraser 192* (κ). Without further locality: Queensland woods, London Exhibition of 1862, *Hill 49* (κ). NEW SOUTH WALES: Sydney woods, Paris Exhibition of 1854, *C. Moore 27* (κ), 40 (κ). **Lord Howe Island:** E side of Intermediate Hill, *Game 69/009* (κ); Transit Hill, *Van Balgooy 1006* (κ); ridge between Old Settlement and North Bay, *Green 1926* (κ); on top of cliff at E end of Ned's Beach, *Uhe 1253* (κ).

Bentham (1868) referred the Lord Howe Island plant to *Achras australe* R. Br. (*Planchonella australis* (R. Br.) Pierre), but this is quite a different species.

Although I have not seen the type, I strongly suspect that *Planchonella reticulata* (Baillon) Pierre, described from New Caledonia, is also a synonym of *P. myrsinoides*. Van Royen (1957) cited a Lord Howe Island collection under this otherwise New Caledonian species. However, with the material at hand at Kew, it is impossible to be positive that the two are conspecific.

## ULMACEAE

### *Celtis* L.

*Celtis paniculata* (Endl.) Planchon, Ann. Sci. Nat. Bot. III. 10: 305. 1848.

Soepadmo (1977) has lumped too enthusiastically, and I agree with A. C. Smith (1978, 1981) that he has included in *Celtis paniculata* taxa that should be maintained as distinct.

The correct name for the Norfolk Island plant is in no doubt, for that island is the type locality of the species. However, when the geographic relationships of the flora of Norfolk Island are considered, it will be necessary to identify the true range of *Celtis paniculata* sensu stricto.

Typical *Celtis paniculata* also seems to occur in New Caledonia (along with other species of the genus) and Australia (northeastern New South Wales and coastal Queensland, including islands in the Gulf of Carpentaria), yet not on Lord Howe Island.

The Fijian plants, *Celtis harperi* Horne ex Baker and *C. vitiensis* A. C. Smith, as Smith (1978, 1981) has pointed out, are distinct from *C. paniculata* in a number of morphological characters that he detailed. I agree also that the plants from farther east, into Polynesia, are different yet again (*C. pacifica* Planchon); those from Tonga and Niue (see Sykes, 1970) are *C. harperi*.

The leaves on the specimens I have seen from New Guinea, Borneo, the Solomon Islands, and Micronesia, although close (especially in venation) to those of *Celtis paniculata*, are consistently elliptic (not ovate-lanceolate) with an acute, rarely subacuminate, apex, not long-acuminate and narrowly acute as in the Norfolk Island plants. The fruits, too, are clearly smaller (5–6 mm long vs. 10–11 mm) and distinctly beaked (with more prominent styler arms); the inflorescences are somewhat strigose, in contrast to glabrous in typical *C. paniculata*. The specimens at Kew from the Moluccas, Ceram, and Tanimbar seem, however, to be *C. paniculata* sensu stricto, or intermediates. A critical and careful study of this complex throughout its range is needed. When this is carried out, I suspect that some of the entities just mentioned will be recognized as subspecies of *C. paniculata*.

There is no doubt that *Celtis conferta* Planchon (both var. *cuneata* Planchon and var. *elliptica* Planchon, which I do not consider sufficiently different for separate recognition) from New Caledonia (Planchon, 1873) is very close to the *Celtis* from Lord Howe Island. They both have elliptic leaves with rounded

apices, short petioles, and venation that is impressed above, giving a slightly bullate appearance; both also have dense inflorescences.

There are differences between the plants from the two islands, however, even though some characters overlap. The broadly conoid fruits from Lord Howe Island seem distinct, for although I cannot be sure that I have seen mature fruits of the New Caledonian plant, those on *McKee 3785* have a shrivelled mesocarp and a hard endocarp and appear to be at least nearly ripe. They are 4.5 mm long (plus a styler beak 1 mm long), with the endocarp very shallowly pitted; those of *Vieillard 3150* are the same. This contrasts with the fruits on *McComish 111A* and *Uhe 1244* from Lord Howe Island, which are 6–7 mm long (plus a 1-mm styler beak) and have deeply pitted endocarps 5.5–6 mm long.

The plant from New Caledonia also appears to have consistently smaller leaves that range from 2 to 6.5 cm (vs. 3–9 cm on the Lord Howe Island plant). The number of pinnate veins on each side of the midrib, above the strong basal lateral pair, is fewer in leaves from New Caledonia, but I believe this is directly related to leaf size, especially length.

Considering the differences and similarities together, I am convinced that the taxonomic situation is best reflected by treating these taxa from adjacent islands as subspecies. In view of the priority of Planchon's name, a new combination is needed for the Lord Howe Island plant.

***Celtis conferta* Planchon subsp. *amblyphylla* (F. Mueller) P. S. Green, comb. et stat. nov.**

*C. amblyphylla* F. Mueller, *Fragm. Phytogr. Austral.* **9**: 76. 1875. TYPE: Lord Howe Island, *Moore & Fullager s.n.* (MEL, not seen; isotype, K!).

## VIOLACEAE

***Viola betonicifolia* Smith subsp. *novo-guineensis* D. M. Moore, Feddes Repert. Spec. Nov. Regni Veg. **68**: 82. 1963.**

The three collections of *Viola* from Norfolk Island that I have examined (*Backhouse s.n.*, 1835 (K), *Laing s.n.* (CANTY), and *McComish 51* (K)), as well as the living plant rediscovered during the Flora and Fauna Society field meeting on 28 August 1971, all agree with Moore's subspecies, which also occurs in eastern Queensland. In 1971 the plant was photographed but not collected so as not to endanger the population further, for the wild violet had not then been seen on the island for many years.

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